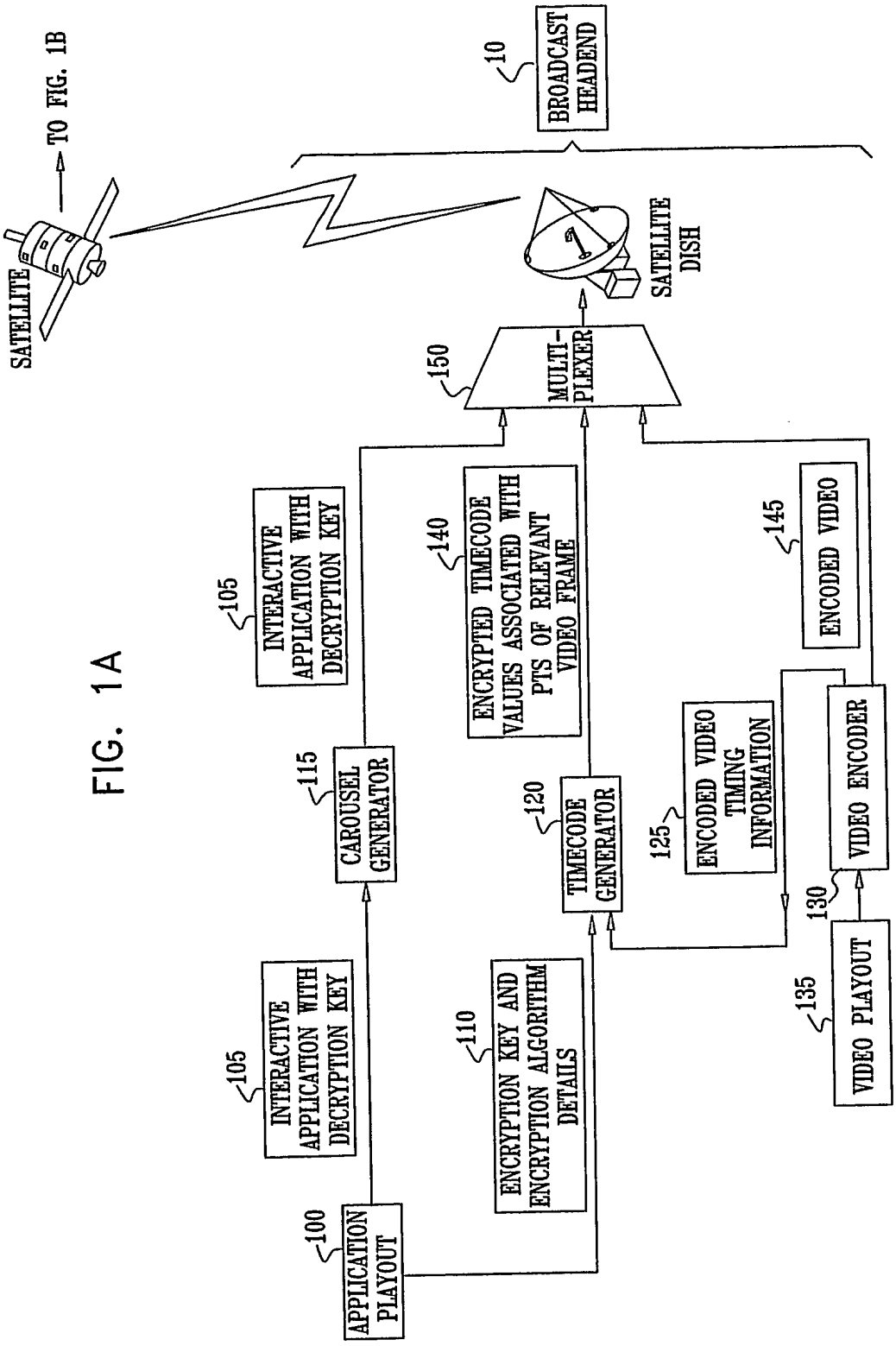

TO FIG. 1B
SATELLITE
10
BROADCAST HEADEND
SATELLITE DISH
150
MULTI-PLEXER
105
INTERACTIVE APPLICATION WITH DECRYPTION KEY
140
ENCRYPTED TIMECODE VALUES ASSOCIATED WITH PTS OF RELEVANT VIDEO FRAME
145
ENCODED VIDEO
115
CAROUSEL GENERATOR
120
TIMECODE GENERATOR
125
ENCODED VIDEO TIMING INFORMATION
VIDEO ENCODER
105
INTERACTIVE APPLICATION WITH DECRYPTION KEY
110
ENCRYPTION KEY AND ENCRYPTION ALGORITHM DETAILS
130
100
APPLICATION PLAYOUT
135
VIDEO PLAYOUT

FIG. 1A

FIG. 1B

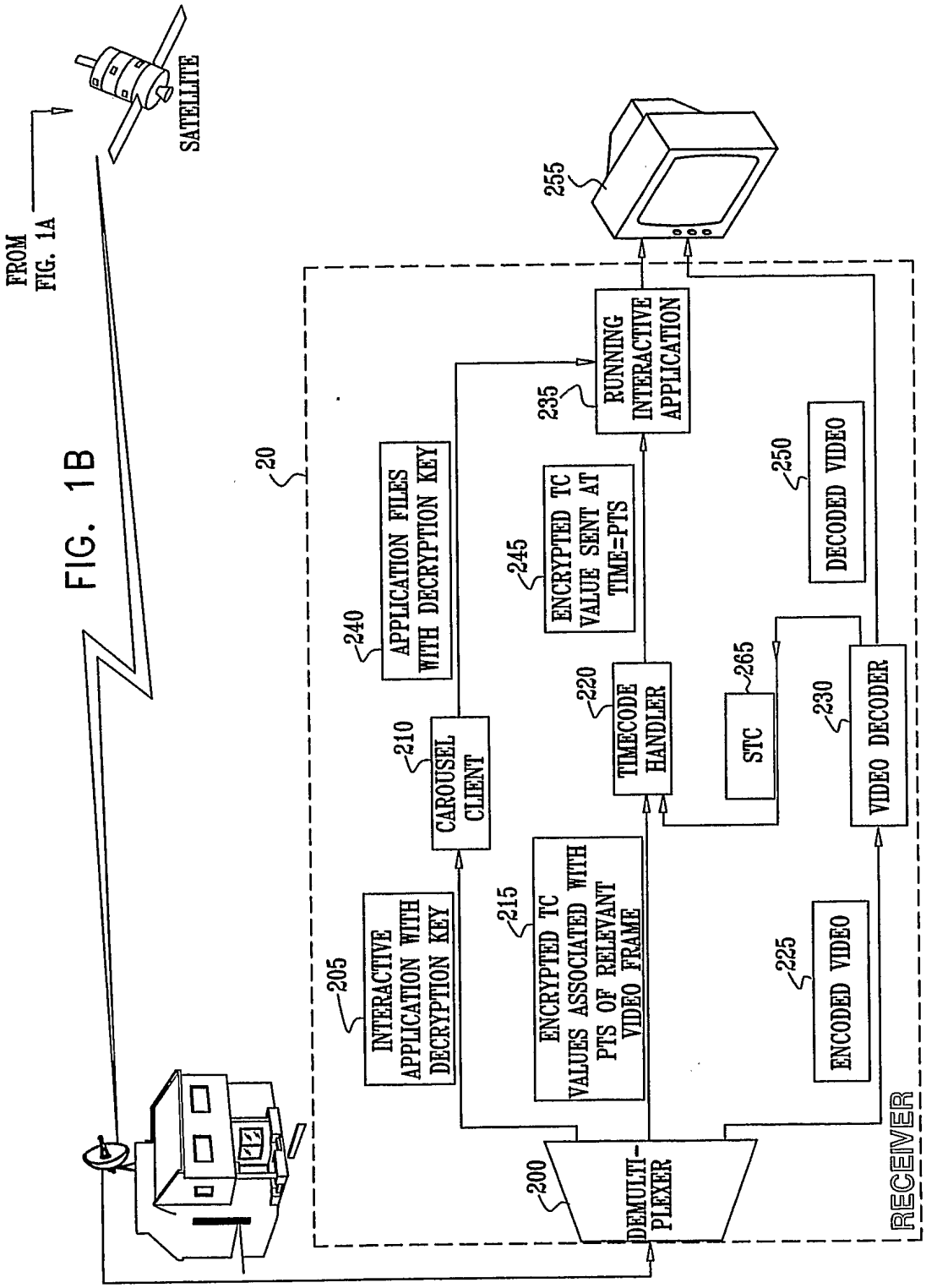

FROM FIG. 1A
SATELLITE
20
255
RUNNING INTERACTIVE APPLICATION
235
APPLICATION FILES WITH DECRYPTION KEY
240
ENCRYPTED TC VALUE SENT AT TIME=PTS
245
DECODED VIDEO
250
CAROUSEL CLIENT
210
TIMECODE HANDLER
220
STC
265
VIDEO DECODER
230
INTERACTIVE APPLICATION WITH DECRYPTION KEY
205
ENCRYPTED TC VALUES ASSOCIATED WITH PTS OF RELEVANT VIDEO FRAME
215
ENCODED VIDEO
225
DEMULTI-PLEXER
200
RECEIVER

FIG. 2

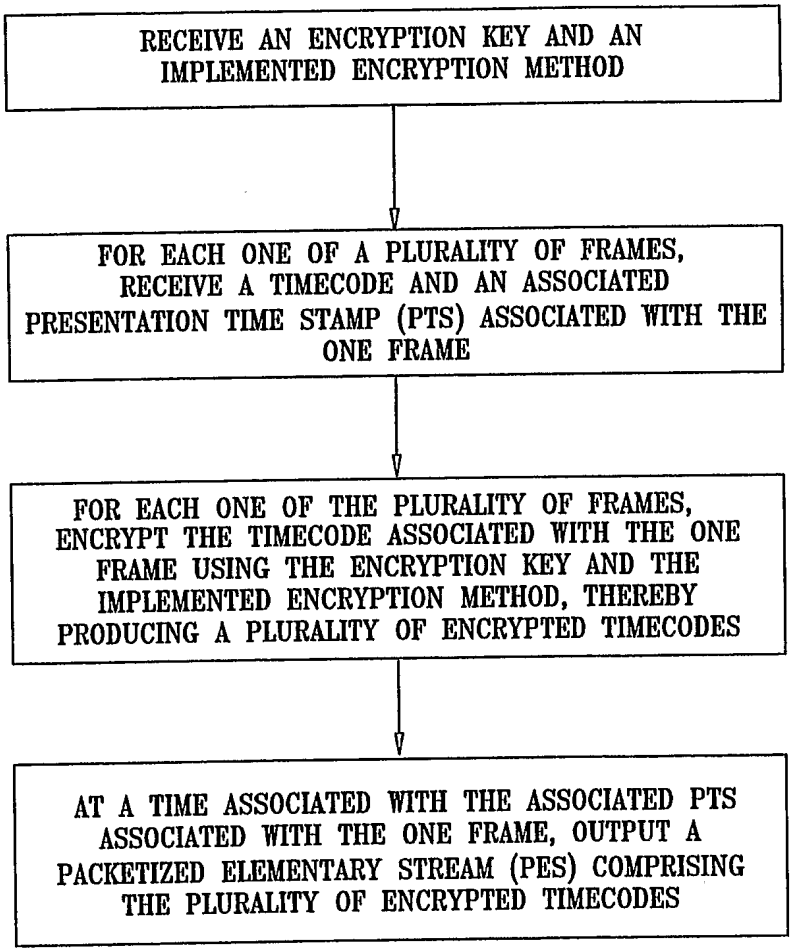

RECEIVE AN ENCRYPTION KEY AND AN IMPLEMENTED ENCRYPTION METHOD
FOR EACH ONE OF A PLURALITY OF FRAMES, RECEIVE A TIMECODE AND AN ASSOCIATED PRESENTATION TIME STAMP (PTS) ASSOCIATED WITH THE ONE FRAME
FOR EACH ONE OF THE PLURALITY OF FRAMES, ENCRYPT THE TIMECODE ASSOCIATED WITH THE ONE FRAME USING THE ENCRYPTION KEY AND THE IMPLEMENTED ENCRYPTION METHOD, THEREBY PRODUCING A PLURALITY OF ENCRYPTED TIMECODES
AT A TIME ASSOCIATED WITH THE ASSOCIATED PTS ASSOCIATED WITH THE ONE FRAME, OUTPUT A PACKETIZED ELEMENTARY STREAM (PES) COMPRISING THE PLURALITY OF ENCRYPTED TIMECODES

FIG. 3

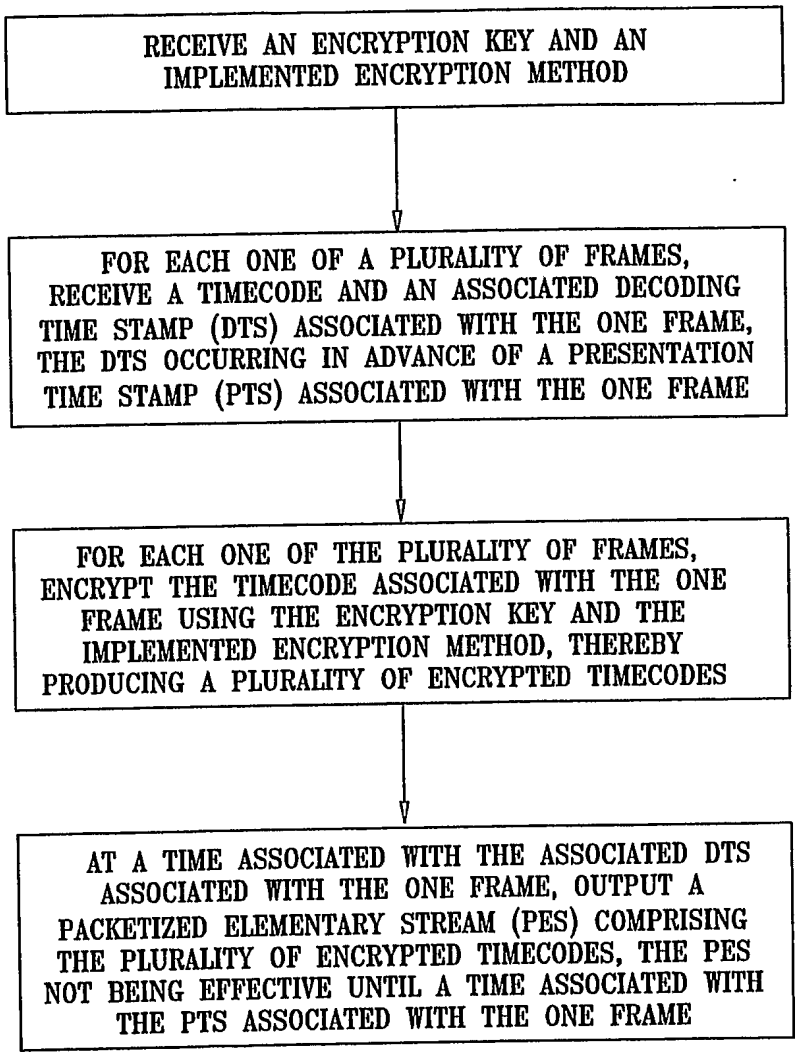

RECEIVE AN ENCRYPTION KEY AND AN IMPLEMENTED ENCRYPTION METHOD
FOR EACH ONE OF A PLURALITY OF FRAMES, RECEIVE A TIMECODE AND AN ASSOCIATED DECODING TIME STAMP (DTS) ASSOCIATED WITH THE ONE FRAME, THE DTS OCCURRING IN ADVANCE OF A PRESENTATION TIME STAMP (PTS) ASSOCIATED WITH THE ONE FRAME
FOR EACH ONE OF THE PLURALITY OF FRAMES, ENCRYPT THE TIMECODE ASSOCIATED WITH THE ONE FRAME USING THE ENCRYPTION KEY AND THE IMPLEMENTED ENCRYPTION METHOD, THEREBY PRODUCING A PLURALITY OF ENCRYPTED TIMECODES
AT A TIME ASSOCIATED WITH THE ASSOCIATED DTS ASSOCIATED WITH THE ONE FRAME, OUTPUT A PACKETIZED ELEMENTARY STREAM (PES) COMPRISING THE PLURALITY OF ENCRYPTED TIMECODES, THE PES NOT BEING EFFECTIVE UNTIL A TIME ASSOCIATED WITH THE PTS ASSOCIATED WITH THE ONE FRAME

FIG. 4

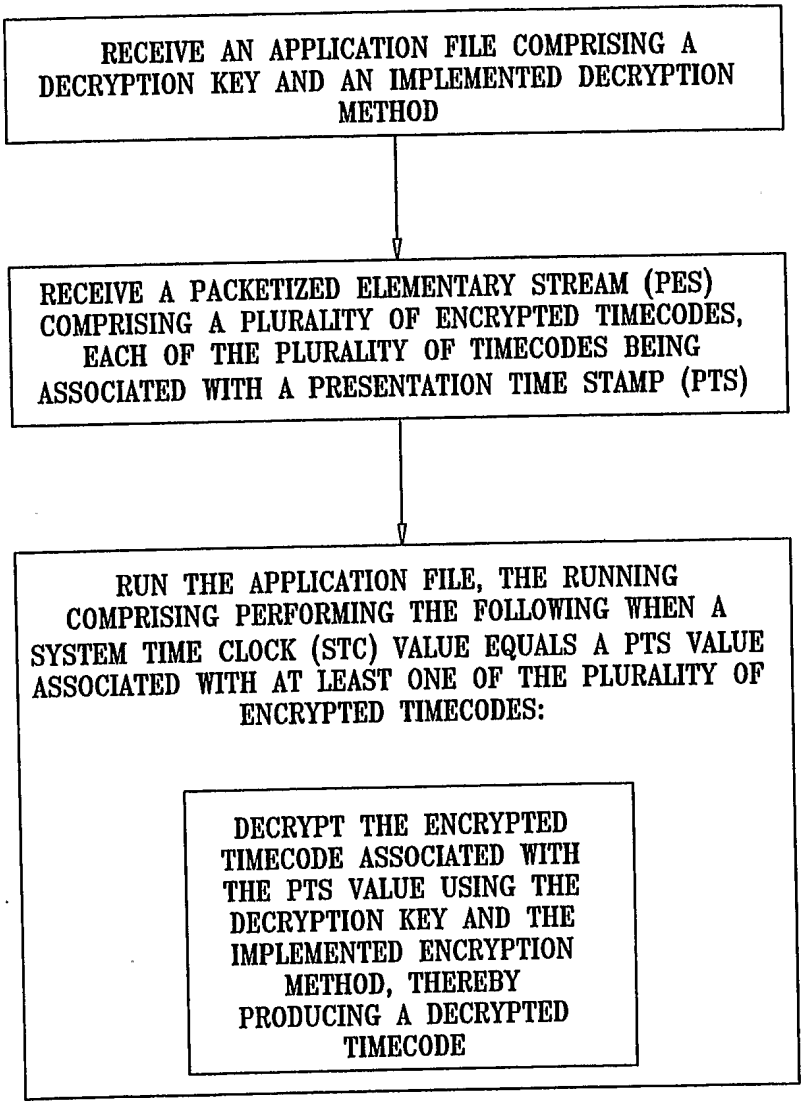
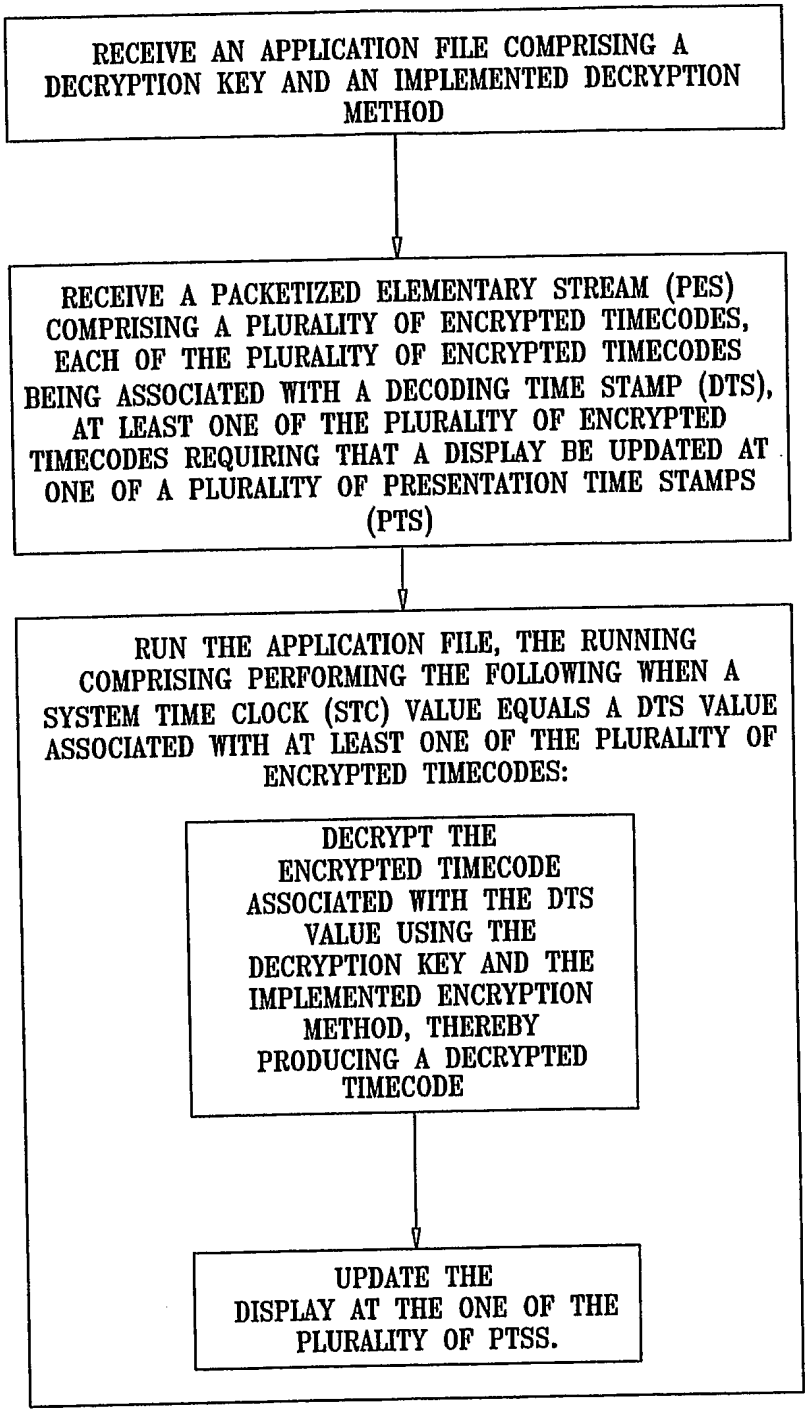

RECEIVE AN APPLICATION FILE COMPRISING A DECRYPTION KEY AND AN IMPLEMENTED DECRYPTION METHOD
RECEIVE A PACKETIZED ELEMENTARY STREAM (PES) COMPRISING A PLURALITY OF ENCRYPTED TIMECODES, EACH OF THE PLURALITY OF TIMECODES BEING ASSOCIATED WITH A PRESENTATION TIME STAMP (PTS)
RUN THE APPLICATION FILE, THE RUNNING COMPRISING PERFORMING THE FOLLOWING WHEN A SYSTEM TIME CLOCK (STC) VALUE EQUALS A PTS VALUE ASSOCIATED WITH AT LEAST ONE OF THE PLURALITY OF ENCRYPTED TIMECODES:
DECRYPT THE ENCRYPTED TIMECODE ASSOCIATED WITH THE PTS VALUE USING THE DECRYPTION KEY AND THE IMPLEMENTED ENCRYPTION METHOD, THEREBY PRODUCING A DECRYPTED TIMECODE

FIG. 5


RECEIVE AN APPLICATION FILE COMPRISING A DECRYPTION KEY AND AN IMPLEMENTED DECRYPTION METHOD
RECEIVE A PACKETIZED ELEMENTARY STREAM (PES) COMPRISING A PLURALITY OF ENCRYPTED TIMECODES, EACH OF THE PLURALITY OF ENCRYPTED TIMECODES BEING ASSOCIATED WITH A DECODING TIME STAMP (DTS), AT LEAST ONE OF THE PLURALITY OF ENCRYPTED TIMECODES REQUIRING THAT A DISPLAY BE UPDATED AT ONE OF A PLURALITY OF PRESENTATION TIME STAMPS (PTS)
RUN THE APPLICATION FILE, THE RUNNING COMPRISING PERFORMING THE FOLLOWING WHEN A SYSTEM TIME CLOCK (STC) VALUE EQUALS A DTS VALUE ASSOCIATED WITH AT LEAST ONE OF THE PLURALITY OF ENCRYPTED TIMECODES:
DECRYPT THE ENCRYPTED TIMECODE ASSOCIATED WITH THE DTS VALUE USING THE DECRYPTION KEY AND THE IMPLEMENTED ENCRYPTION METHOD, THEREBY PRODUCING A DECRYPTED TIMECODE
UPDATE THE DISPLAY AT THE ONE OF THE PLURALITY OF PTSS.

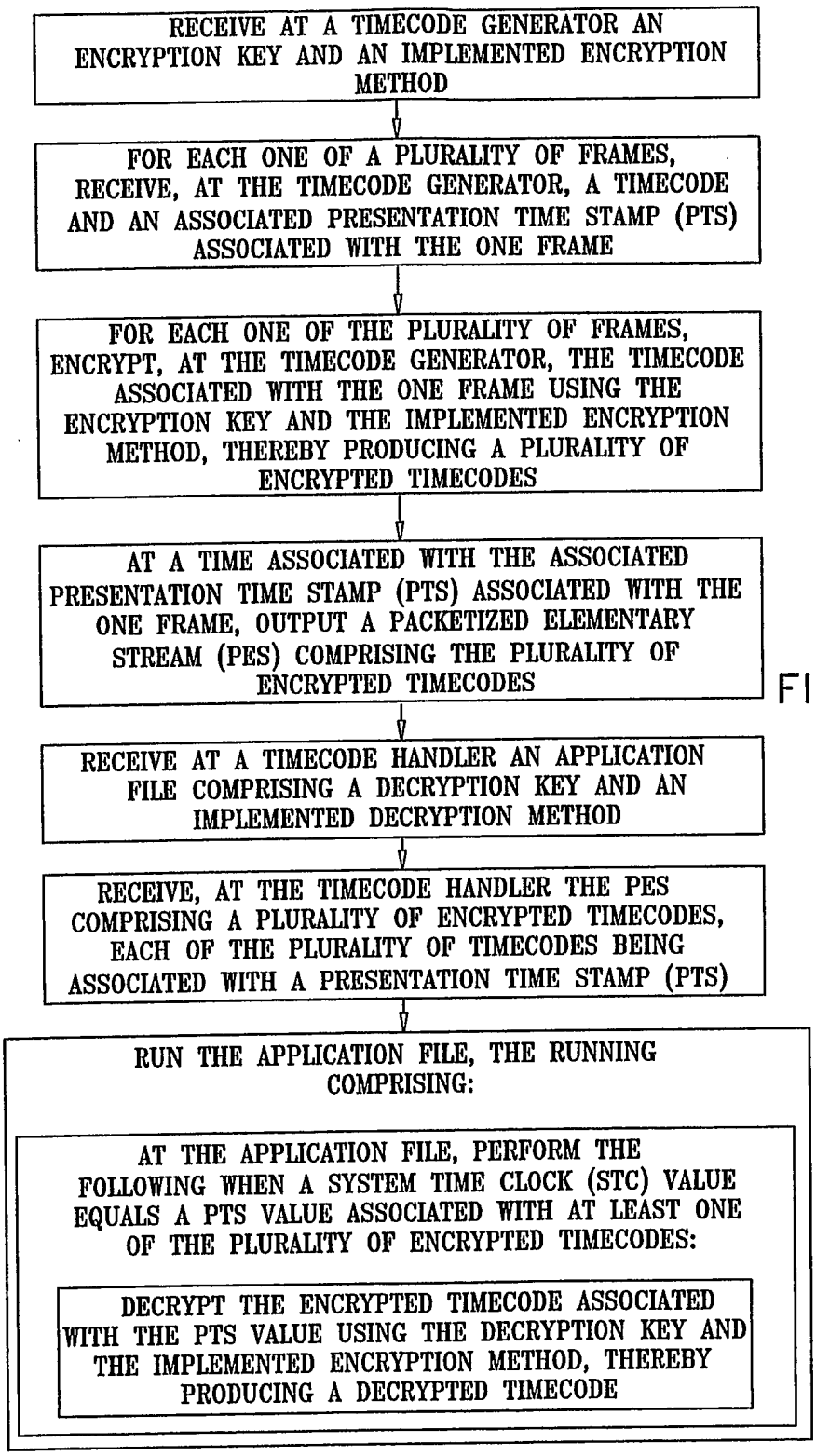

RECEIVE AT A TIMECODE GENERATOR AN ENCRYPTION KEY AND AN IMPLEMENTED ENCRYPTION METHOD
FOR EACH ONE OF A PLURALITY OF FRAMES, RECEIVE, AT THE TIMECODE GENERATOR, A TIMECODE AND AN ASSOCIATED PRESENTATION TIME STAMP (PTS) ASSOCIATED WITH THE ONE FRAME
FOR EACH ONE OF THE PLURALITY OF FRAMES, ENCRYPT, AT THE TIMECODE GENERATOR, THE TIMECODE ASSOCIATED WITH THE ONE FRAME USING THE ENCRYPTION KEY AND THE IMPLEMENTED ENCRYPTION METHOD, THEREBY PRODUCING A PLURALITY OF ENCRYPTED TIMECODES
AT A TIME ASSOCIATED WITH THE ASSOCIATED PRESENTATION TIME STAMP (PTS) ASSOCIATED WITH THE ONE FRAME, OUTPUT A PACKETIZED ELEMENTARY STREAM (PES) COMPRISING THE PLURALITY OF ENCRYPTED TIMECODES
RECEIVE AT A TIMECODE HANDLER AN APPLICATION FILE COMPRISING A DECRYPTION KEY AND AN IMPLEMENTED DECRYPTION METHOD
RECEIVE, AT THE TIMECODE HANDLER THE PES COMPRISING A PLURALITY OF ENCRYPTED TIMECODES, EACH OF THE PLURALITY OF TIMECODES BEING ASSOCIATED WITH A PRESENTATION TIME STAMP (PTS)
RUN THE APPLICATION FILE, THE RUNNING COMPRISING:
AT THE APPLICATION FILE, PERFORM THE FOLLOWING WHEN A SYSTEM TIME CLOCK (STC) VALUE EQUALS A PTS VALUE ASSOCIATED WITH AT LEAST ONE OF THE PLURALITY OF ENCRYPTED TIMECODES:
DECRYPT THE ENCRYPTED TIMECODE ASSOCIATED WITH THE PTS VALUE USING THE DECRYPTION KEY AND THE IMPLEMENTED ENCRYPTION METHOD, THEREBY PRODUCING A DECRYPTED TIMECODE

FIG. 6

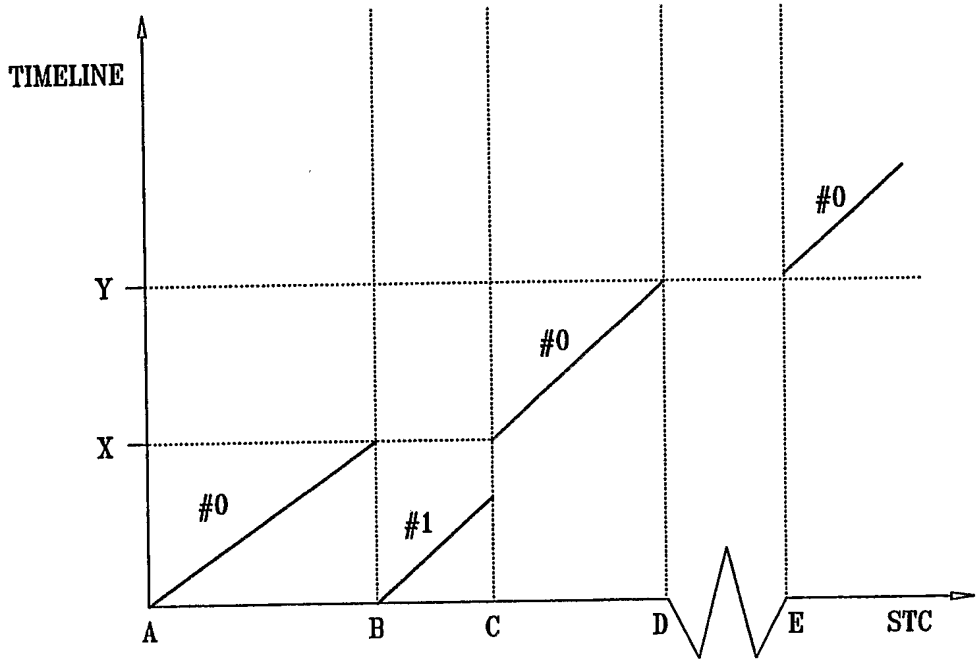



FIG. 7